What are Light Water Reactors?

A thermal-spectrum, Light Water Reactor power plant

U.S. developed technology - Light Water Reactors (LWRs) - dominates the world market for nuclear power plants

LWR technology, developed initially in the U.S., now dominates world nuclear energy because the technology is well proven and has favorable economics compared to other current options. All 103 nuclear power plants used in the United States for electric power production are light water reactors. They generate 20 percent of the nation's electricity, a market share second only to coal at 50 percent.

How they work

In these power plants, water is used as both the moderator and the coolant. The moderator in a reactor causes neutrons to slow down so that when the neutrons strike the uranium fuel, it fissions or splits apart - giving off heat. The heat from the *fission* reaction is removed by the coolant to produce steam to drive the turbines of the electric generators.

Where are they?

Virtually all of the world's 441 operating nuclear power plants are "*thermal reactors*" as opposed to "*fast reactors*." Most thermal reactors are LWRs.

The 103 U.S. operating power plants are distributed in every region of the country.

The future

In August 2005, President George W. Bush signed into law the Energy Policy Act of 2005 (EPACT). EPACT 2005 contains provisions for production tax credits for advanced nuclear facilities, and loan guarantees for low-emission energy production technologies. The EPACT also authorized funds for implementing the Nuclear Power 2010 program, a joint government/industry cost-shared effort to identify sites for new nuclear plants, develop and bring to market advanced standardized nuclear plant designs, and demonstrate streamlined regulatory processes.

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